

HIS Nature

*"In him we live and move
and have our being"*
ACTS 17:28

can be a blessing *and* a curse. Eyesight allows us to maintain our balance, but is also why so many people experience motion sickness. In an automobile or an airplane, for instance, our vestibular system detects movement, which is not always precisely coordinated with our vision. One way to reduce motion sickness is to keep your eyes fixed on the distant horizon as you look out the window of a car or plane.

The complexity of the vestibular system is beyond our wildest imaginations. It is this system that allows a child to keep his balance as he rides a bicycle and prevents a toddler from tumbling to the ground every time she runs (which sometimes happens because her nervous system and muscles are still developing). Our vestibular system makes a supercomputer look like a simple calculator and reveals Christ to

be the *Genius beyond all genius*.

Animals and plants are employed in a lifetime of glorious labor—God-ordained work to display His divine majesty. When a tree stretches its branches to the sky or an animal jumps for joy, it cultivates a rich harvest of worship in the field of gravity for those who have eyes to see!

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Jellyfish—© vilainecrevette
Ear—NASA



I praise you, for I am fearfully and wonderfully made. Wonderful are your works; my soul knows it very well.
PSALM 139:14

SENSING GRAVITY

Our Lord Jesus gave all His creatures—from bacteria to people—the ability to detect gravity and maintain balance. He doesn't leave us as "blind explorers" in the expanse of His creation. He is a *kind and caring Creator!* Although we cannot see gravity with our eyes, we know it's there. But how exactly does Christ enable plants and animals to maneuver in Earth's gravitational field?

Vegetation also responds to gravity. It does not matter how you plant a seed—right side up or upside down—God will make it grow correctly. The roots of plants grow down



Figure skater

and their stems grow up. If a tree's roots grew up, not down, the tree would soon die from lack of moisture and minerals. The tiny roots and shoots of sprouting seeds possess cells containing *grains of starch* that respond to the Earth's gravity.

If you turn a potted plant sideways, the roots and stem will begin to grow in a new direction only 15 to 30 minutes after being rotated;

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roots continue to grow downward and stems upward.

A plant's ability to respond in this way is called *gravitropism*. And the growth of roots is said to be an example of *positive gravitropism* because roots move in the direction of gravity. Shoots display *negative gravitropism* because they grow away from the pull of gravity.

Christ's creation of animals is even more complex because animals require balance and agility in order to navigate safely in Earth's gravitational field. Jesus sewed several tiny "stones" or *statoliths* into the outer bell of a jellyfish so it can "know" when it's swimming up, down, or sideways. These minute statoliths move in response to gravity as the jellyfish performs

A jellyfish



its rhythmic, aquatic dance. Many invertebrates possess similar means to measure the force of gravity.

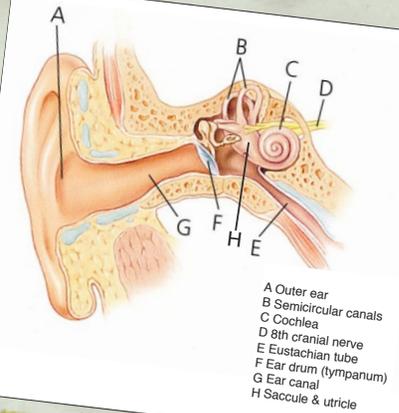
Inside the inner ears of vertebrates is a group of tiny sensory organs that help form the *vestibular* (pronounced veh-*-STIB* - yoo - lawr) *system*. These organs detect the pull of gravity and other accelerating forces experienced when an animal or a person walks, runs, jumps, or flies. Without Christ's invention of the *vestibular system*, dogs could not chase cats, birds would be grounded, fish could not swim, and people would not be able to stand upright, let alone participate in sports. This same vestibular system is found in the octopus (an invertebrate). Isn't it remarkable that God can create two vastly different creatures that possess the same "equipment."

The vestibular system also includes the *semicircular*



canals (SCC)—three amazing, precisely positioned loops in the inner ear. Jesus designed the SCC to detect *angular acceleration*—the movement of the head as it *rotates* in any direction. Within the SCC, a thick liquid starts to circulate with rotation. It is this movement of fluid that informs the brain that it is spinning.

When our *semicircular canals* are stimulated, we know we are rotating even without looking. If we spin more than a few seconds, however, we can become dizzy and experience nausea. Figure skaters learn how to ignore input coming from their vestibular senses so they can continue skating after a spin. (Incidentally, ninety percent of figure skaters spin counterclockwise because this direction seems to produce less dizziness, though some left-handed skaters rotate clockwise during their spins.)



Anatomy of the ear

Another group of vestibular organs in our inner ear consists of the *sacculle* and the *utricle*. These are essentially little bags filled with fluid and hundreds of thousands of microscopic calcium carbonate stones. Whenever we experience *linear acceleration*—acceleration caused by gravity or the speeding up of a car for instance—these ultra-tiny stones (called *otoliths*) inside the *sacculles* and *utricles* press down on microscopic nerve hairs, giving us a sense of movement.

Our sense of balance is also tied to our eyes, and this

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